



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,593	01/29/2004	Edward Gustav Chron	ARC920030099US1	5209
29154	7590	06/02/2009	EXAMINER	
FREDERICK W. GIBB, III Gibb Intellectual Property Law Firm, LLC 2568-A RIVA ROAD SUITE 304 ANNAPOLIS, MD 21401			ZHANG, SHIRLEY X	
		ART UNIT	PAPER NUMBER	
		2444		
		MAIL DATE		DELIVERY MODE
		06/02/2009		PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/767,593	CHRON ET AL.
	Examiner	Art Unit
	SHIRLEY X. ZHANG	2444

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 09 March 2009.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 2,5-7,10,11,18-20,22,29 and 30 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 2,5-7,10,11,18-20,22,29 and 30 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ .	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Claims 1-2, 5-7, 10-12, 16-20 and 22 were previously pending;

Claims 1, 12 and 16-17 have been cancelled;

The rest of the claims have been amended;

Claims 29-30 are newly added;

Claims 2, 5-7, 10-11, 18-20, 22 and 29-30 are now pending;

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 9, 2009 has been entered.

Response to Amendments

2. Applicant's arguments and amendments filed on [REDACTED] have been carefully considered. As applicant's arguments focus mainly on limitations newly added to the claims, the examiner's response can be found below in the "Claim Rejections" section.

3. New independent claims 29-30 are submitted with the RCE to replace the independent claims 1 and 12. However, it is the Examiner's opinion that the new claims, although describing the invention in a different manner, do not present any limitations that substantially differentiate

the claimed invention from the prior art reference to put the pending claims in condition for allowance.

4. Rejections of claims 1 and 12 are withdrawn because the claims have been cancelled.

Claim Rejections - 35 USC § 112

Claim Objections

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim language makes it unclear to the Examiner whether a single Ethernet packet or a plurality of standard Ethernet packets was sent to the client computer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 2, 5-7, 10-11, 18-20 and 29-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Miloushev et al. (U.S. 2002/0120763, hereinafter “**Miloushev**”), in view of IETF RFC 1094 (“Network File System Protocol Specification”, version 2.0, hereinafter “**RFC 1094**”).

Regarding claim 29, Miloushev disclosed a system for virtualizing multiple network attached stores, said system comprising:

a plurality of network attached stores connected to an internal communications network (Miloushev, Fig. 1, “file server 1” to “file server 7”),

wherein each of said plurality of network attached stores corresponds to a plurality of network attached store computers (Miloushev, Fig. 1, “file server 1” to “file server 7”);

a client computer, running a client application, connected to an external communications network (Miloushev, Fig. 1, any one of “CLT 1” to “CLT 4”);

a virtualizer connected to said internal communications network and said external communications network (Miloushev, Fig. 1, “file switch 100”),

wherein said virtualizer:

advertises a network address to said client computer for storage (Miloushev, Fig. 6 and [0061], [0170]), said network address being accessed by a connection-oriented network attached store protocol used by said client computer (Miloushev, [0123], “NFS” or “CIFS”);

receives a request for storage from said client computer and determines that said request is a single packet request (Miloushev, Figs. 2-4, and [0132], “write request”);

determines which single network attached store of said plurality of network attached stores will process said request for storage based on configuration information relating to said plurality of network attached stores (Miloushev, [0137] disclosed that the switch 100 examines the write request and decides which of the file servers, i.e., network attached stores, to forward the request); and

routes said request for storage to a single network attached store, corresponding to a single network attached store computer (Miloushev, [0137] disclosed that the switch 100 forwards the write request to the chosen file server);

wherein said single network attached store computer:

processes said request for storage (Miloushev, [0143]);

constructs a response, said response including information relating to processing of said request for storage and data to be included in said response (Miloushev, Fig. 4 and [0143] disclosed that the file server forms a transaction/write response 206);

packetizes said response, as a single packet response and sends said single packet response to said virtualizer (Miloush, Fig. 4 and [0143] disclosed that the file server sends the response back to the file switch 100; as NFS or CIFS is used as the file system protocol, it is inherent that the file server must packetize the response before sending it to the file switch);

wherein said virtualizer:

determines that said response is a single packet response (Miloushev, Fig. 4 and [0144]); and

forwards said response to said client computer (Miloushev, Fig. 4 and [0144]); and

wherein said client computer passes said response to said client application (Miloushev, [0145]).

Regarding claim 2, Miloushev disclosed the communications network of claim 29.

Miloushev further disclosed

an internal network of connection nodes connecting said virtualizer with said plurality of network-attached store computers (Miloushev, Fig. 1);

a computer system providing network attached store service according to a network file system protocol (Miloushev, [0123], “NFS” or “CIFS”);

a plurality of communications network adapters by which said computer system connects to said internal communications network, and a plurality of storage network adapters by which said computer system connects to said internal storage network (Figs. 1, 14 and [0124]).

As to claim 5, Miloushev disclosed the communications network of claim 29.

Miloushev further disclosed that the system comprises an Ethernet networking hardware and medium access protocols for facilitating communication within said internal communication network (Miloushev, [0122] disclosed that the file switch is preferably equipped with multiple high-speed network interfaces, such as gigabit or higher Ethernet interfaces).

As to claim 6, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed that the system comprises a Transmission Control Protocol / Internet Protocol suite for facilitating communication between said plurality of network-attached store computers and said plurality of client computers (Miloushev, [0133] discloses that the file switch contains a TCP protocol stack).

As to claim 7, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed that the system comprises a storage access protocol for facilitating communication between a storage component within said communications network and remaining components within said communications network (Miloushev, [0123] discloses that the file switch preferably supports multiple industry standard network file protocols, such as NFS and CIFS).

As to claim 10, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed wherein said virtualizer comprises a network router (Miloushev, [0133] discloses that the typical operation of the file switch involves receiving file protocol requests, such as login, tree connect/mount, file open, file read/write, etc., from clients 112 and 113 and forwarding, or switching these requests to one or more of the file servers 101 through 107, therefore the file switch has the function of a network router).

As to claim 11, Miloushev disclosed the communications network of claim 29.

Milousheve further disclosed that the system comprises a communication virtualizer file switch connected to a client computer and a server computer for sending requests from one of a

plurality of client computers to a network-attached store and from said network-attached store computer back to said one of said plurality of client computers (Miloushev, Fig. 5 and [0133] disclosed that the file switch forwards client requests to the file servers; [0134] disclosed that the file switch sends responses from the server back to the client).

Regarding claim 30, Miloushev disclosed a computer-implemented method for virtualizing multiple network attached stores, the method comprising:

initiating, by a client application running on a client computer, a request for storage (Miloushev, Figs. 2-4 and [0133-0145]);

packetizing, by said client computer, said request for storage as a single packet request (Miloushev, Figs. 2-4 and [0133-0145]);

sending, by said client computer, said request for storage to a network address, advertised by a virtualizer, using a connection-oriented network attached store protocol (Miloushev, Figs. 2-4 and [0133-0145]);

receiving, by said virtualizer, said request for storage (Miloushev, Figs. 2-4 and [0133-0145]);

determining by said virtualizer that said request is a single packet request (Miloushev, Figs. 2-4 and [0133-0145]);

determining, by said virtualizer, which single network attached store of a plurality of network attached stores will process said request for storage based on configuration information relating to said plurality of network attached stores (Miloushev, Figs. 2-4 and [0133-0145]);

routing said request for storage to said single network attached store (Miloushev, Figs. 2-4 and [0133-0145]);

processing said request for storage in a network attached store computer corresponding to said single network attached store (Miloushev, Figs. 2-4 and [0133-0145]);

constructing a response by said single network attached store computer, said response including information relating to processing of said request for storage and data to be included in said response (Miloushev, Figs. 2-4 and [0133-0145]);

packetizing said response, by said network attached store computer, as a single packet response (Miloushev, Figs. 2-4 and [0133-0145]);

sending, by said network attached store computer said single packet response to said virtualizer (Miloushev, Figs. 2-4 and [0133-0145]);

determining, by said virtualizer, that said response is a single packet response (Miloushev, Figs. 2-4 and [0133-0145]);

forwarding, by said virtualizer, said response to said client computer (Miloushev, Figs. 2-4 and [0133-0145]); and

passing, by said client computer, said response to said client application (Miloushev, Figs. 2-4 and [0133-0145]).

For more information on Examiner's rationale for mapping the reference

Miloushev's teaching to the claim elements, see the rejection of claim 29 above.

As to claim 18, Miloushev disclosed the communications network of claim 30.

Miloushev further disclosed wherein said chosen client computer is configured for receiving said response from said one of said plurality of communication virtualizers (Miloushev, Fig. 4 and [0144-0145]);
de-packetizing said response (it is inherent in the file system protocol NFS or CIFS that uses TCP/IP stack); and
routing said corresponding response to an initiating application (Miloushev, [0123])
disclosed that the file switch preferably supports multiple industry standard network file protocols, such as NFS and CIFS, which implies that there must be a NFS or CIFS application on the client to receive and process responses to the requests).

As to claim 19, Miloushev disclosed the communications network of claim 30.

Miloushev further disclosed wherein single packet request and said single packet response have a packet sequence number of zero and a set of end-of-request flag (Miloushev, [0123], TCP/IP based “NFS” and “CIFS” inherently has a way to mark the end of a request, which could be the length of the payload combined with the fragment offset in IP header)

As to claim 20, disclosed the communications network of claim 19.

Miloushev further disclosed wherein said virtualizer determines which of said plurality of network-attached store computers to transmit said request for storage to by examining said zeroth packet in said request (Miloushev, [0137] discloses that upon receipt of the first frame 201, which contains the request header 200, the switch 100 recognizes that this frame signifies

the beginning of a new message, examines the header 200 and decides to which of the file servers to forward the whole message).

7. **Claim 22** are rejected under 35 U.S.C. 103(a) as being obvious Miloushev and RFC 1094, further in view of IETF RFC 791, hereinafter “**RFC 791**”.

As to claim 22, Miloushev disclosed the communications network of claim 21.

Miloushev further disclosed that said one of said plurality of network-attached store computers sends a standard Ethernet packet to said one of said plurality of communication virtualizers in reply to a client computer’s request (Miloushev, [0122] discloses that the file switch is preferably equipped with multiple high-speed network interfaces, such as gigabit or higher Ethernet interfaces);

Miloushev did not explicitly disclose but it is inherent in RFC 791 that said communication virtualizer dividing said standard Ethernet packet into a plurality of standard Ethernet packets to send to said client computer as a response comprising a single Ethernet packet (RFC 791, Section 2.3 “Function Description” discloses that IP employs the fragmentation technique that segments large packets into a series of smaller packets of a size that the underlying physical medium supports, as each type of physical media has its own Maximum Transmission Unit (MTU) requirement; In other words, if the communication virtualizer receives from the network attached store computer as a response a single packet of large size, e.g., a jumbo Gigabit Ethernet packet of 9000 bytes, the IP protocol built into the communication virtualizer will divide said large packet into a plurality of standard 1500-byte Ethernet packets

that is acceptable to the regular 100Mps Ethernet connecting the said virtualizer to client computers).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHIRLEY X. ZHANG whose telephone number is (571)270-5012. The examiner can normally be reached on Monday through Friday 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Vaughn can be reached on (571) 272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shirley X. Zhang/
Examiner, Art Unit 2444
5/21/2009
/William C. Vaughn, Jr./

Supervisory Patent Examiner, Art Unit 2444

Application/Control Number: 10/767,593
Art Unit: 2444

Page 13